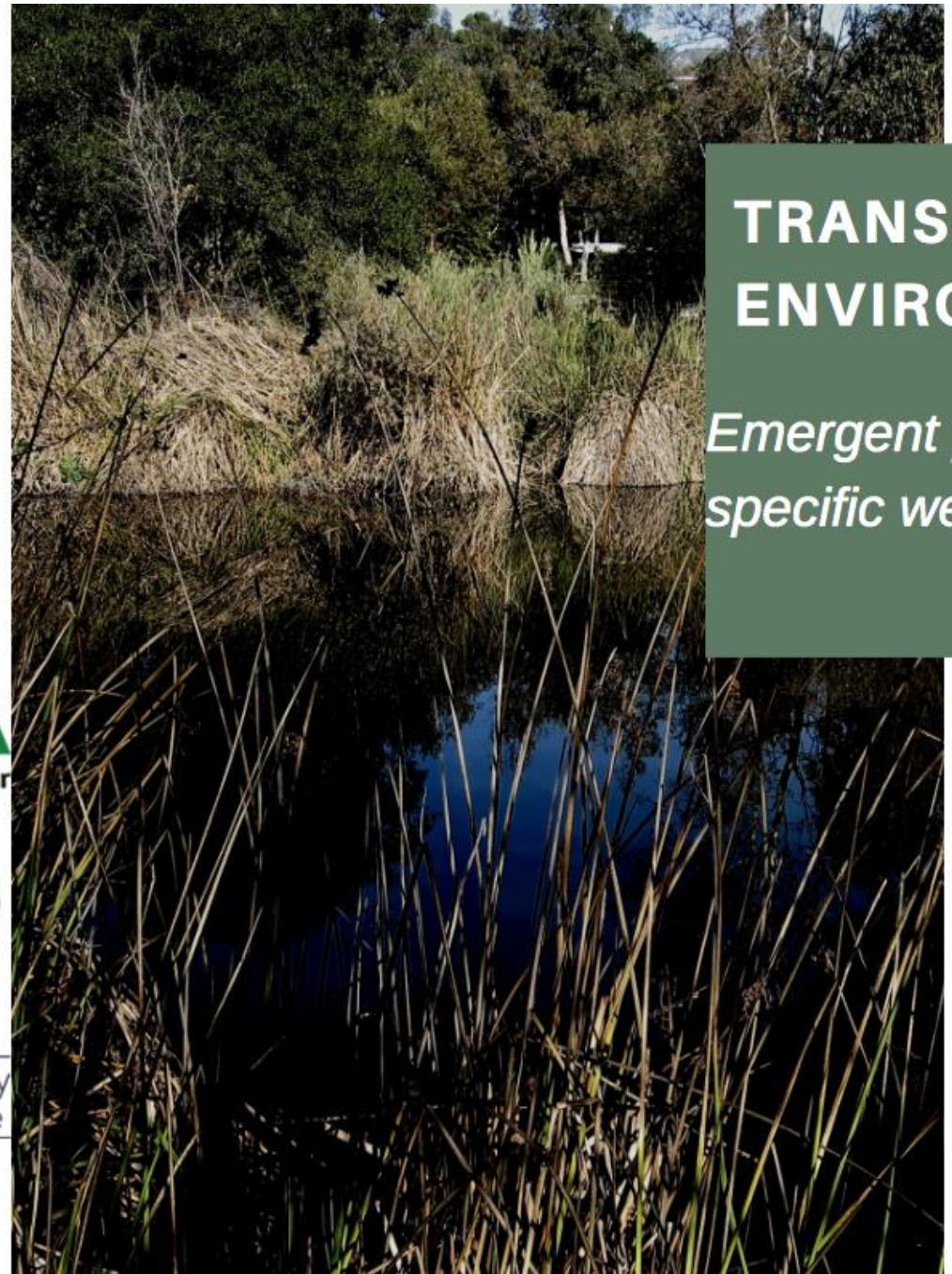

TRANSITIONS-BASED STRATEGIC ENVIRONMENTAL ASSESSMENT:

Emergent protocols and techniques for prioritizing site specific wetland services during offsetting procedures.

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OAIA
Ontario Association for Impact Assessment

TRENT UNIVERSITY

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Central Lake Ontario Conservation

Presentation Outline

- **Introduction to Wetlands and Wetland Offsetting**
  - The Value of Wetlands in Southern Ontario
  - Threats to Wetlands in Southern Ontario
  - Wetland Offsetting
  - Research Purpose Statement
  - Operational Definitions

- **Strategic Wetland Offset Site Selection**
  - Current Priorities
  - Strategic Wetland Offset Site Selection Score Card
  - Benefits and Risks
  - Policy and Future Directions

The Value of Wetlands in Southern Ontario

What is a wetland?

- Wetlands are both **key natural heritage features** and **hydrologically sensitive features** (ORMCP, Sec. 22 & 26)
- A wetland is: *"... land such as a **swamp, marsh, bog or fen** (not including land that is being used for agricultural purposes and no longer exhibits wetland characteristics) that,*

  ***(a)** is **seasonally or permanently covered by shallow water** or has the **water table close to or at the surface**;*

  ***(b)** has **hydric soils and vegetation** dominated by **hydrophytic or water-tolerant plants**; and*

  ***(c)** has been further **identified by**, the Ministry of Natural Resources or by any other person, **according to evaluation procedures established by the Ministry of Natural Resources**, as amended from time to time,"* (ORMCP, 2017).

The Value of Wetlands in Southern Ontario

Wetland Value:

- Wetlands are **ecologically rare and sensitive ecosystems** with values that can translate into **important societal values**.
- They provide a **wide variety of services, including the maintenance of natural processes and human utility values**. These include mitigation of **climate change** impacts on **air** and **water quality and quantity**, **flood mitigation** through water run-off easement, **erosion** prevention, **nutrient and toxic chemical removal**, groundwater recharges, buffering against future **drought risks**, **Species at Risk** habitat, plant and animal **biodiversity**, pollination services, **food and medicinal resources**, **recreational, educational and cultural opportunities.**

(ORMCP, 2017; OMNRF, 2016)

The Value of Wetlands in Southern Ontario

Wetlands as ”Green” Infrastructure:

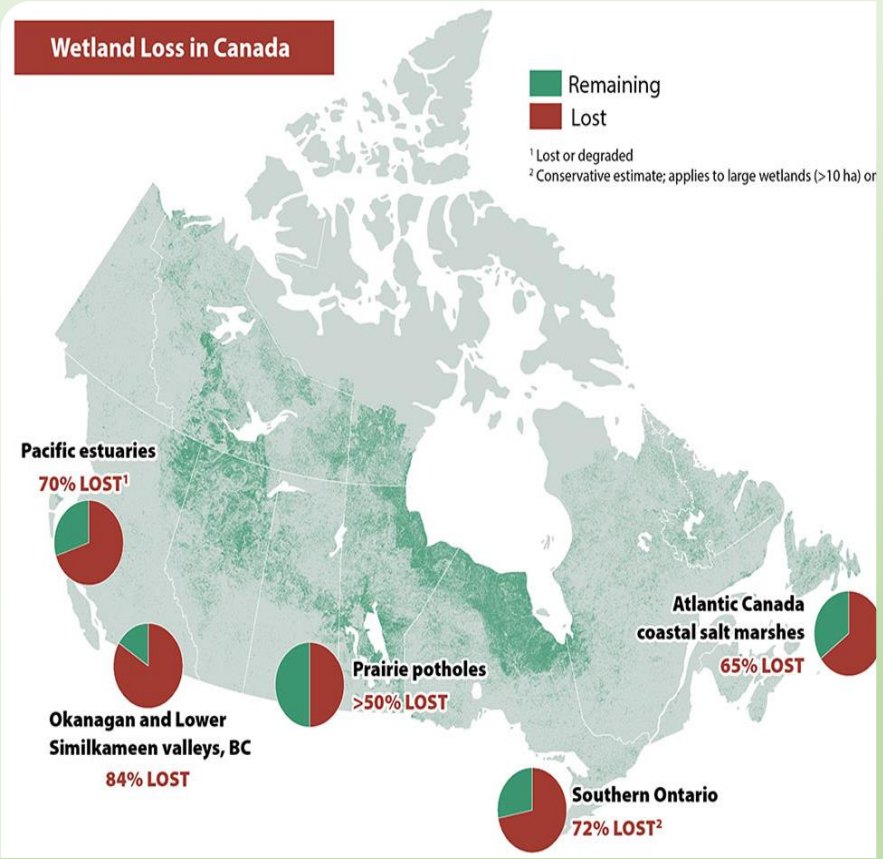
- Wetlands in Ontario alone produce an **economic benefit of $14 billion per year.**
- These benefits are demonstrated **through key ecosystem services**, such as flood mitigation, water filtration and storage, biodiversity habitat, and recreational value.
- These benefits are **13-35x greater than the costs of protection or restoration**, dependent on location.
- Wetlands left intact on landscape can **reduce flood damage costs by 38%.**

(OMNRF, 2016).

Threats to Wetlands in Southern Ontario

- **70-90% loss** in Southern Ontario since western settlement, largely due to **agriculture** and **urban development**
- **Developmental pressures** on and near wetlands **will continue** into the future due to **population increases** and changes in **government structures and regulations.**
- This development is certain to be in the forms of **roads** and **other infrastructure, industries, residences** and **natural resource extraction sites.**
- The Province of Ontario **does not currently have any set or formal policies in place to regulate the replacement of wetlands** in the instance that non provincially significant wetlands and non coastal wetlands are developed on.

(OMNRF, 2016)



Wetland Offsetting

- *Definition:* The purposeful rehabilitation or creation of wetlands to **compensate for the negative impacts of development** (Poulton & Bell, 2017). It is the fourth step in a **mitigation hierarchy**: (1) Avoid; (2) Minimize; (3) Mitigate; (4) Compensate (MNRF, 2016).
- *Strengths:* A **net gain in wetland area and function**, "with respect to species composition, habitat structure, ecosystem functions and people's use and cultural values associated with biodiversity," (BBOP, 2016); **Wetland offsetting** and **strong impact assessment tools in offsetting policy** are useful because they **allow for development** by meeting the demands of energy, transport, water, housing and food, but also allow for the growth and prosperity of the environment and communities, in appropriate cases.
- *Weaknesses:* Inherent **risks and uncertainties** in wetland restoration; **Without strong, consistent policy and government oversight**, there may be the risk of Proponents taking advantage of system and "**throwing money**" at their problems; According to the *Provincial Policy Statement*, **offsetting will not apply to infrastructure development and drainage works**.
- *Research Gaps:* Methodologies for **wetland offset site selection** & prioritization; A **lack of standards and tools** for **assessing the impacts** of wetland site gains and losses.

Research Purpose Statement

The purpose of this study is to identify and describe **how landscape managers are selecting for and prioritizing the offsetting of wetland services for specific sites** based on their potential **contribution to integrated regional needs**, while acknowledging and **minimizing the inherent uncertainties** associated with wetland offsetting.

Priorities in Wetland Offset Site Selection

Conservation Authorities	Municipalities	Environmental Non-Government Organizations	Environmental Consultants	Ontario Ministry of Natural Resources and Forestry
Prioritize watershed targets, long-term conservation, connectivity (NHS), biodiversity and habitat functions, & flood mitigation.	Prioritize legislation and funding directives, flood mitigation, & recreational opportunities.	Priorities often decided by funding. Often prioritize for species biodiversity, Species at Risk, habitat functions, & long-term conservation.	Prioritize biological and ecological site characteristics, biodiversity, habitat functions, connectivity (NHS), long-term conservation, & community education.	Prioritize wetland cover, training and education, evaluation, water quality, watershed targets, legislation (RAP, PPS), connectivity (NHS), & long-term conservation.

Strategic Wetland Offset Site Selection Score Card:
(SWOSSS Card)

3. Location of Offset Site: *(Score:)*

- ❑ On the same site as the Impact Site (+1)
- ❑ Within same watershed as Impact Site (+2)
- ❑ Within same sub-watershed as Impact Site (+3)
- ❑ Within same municipality as Impact Site (+2)
- ❑ Upstream from human population >1000 (+2)
- ❑ Region has less than 10% wetland cover (+2)

10. Ecosystem Service Opportunities at Offset Site: *(Score:)*

- ❑ Moderation of Extreme Events (+3)
- ❑ Fresh Water/Water Filtration (+3)
- ❑ Species Biodiversity & Habitat (+3)
- ❑ Carbon Sequestration & Storage (+3)
- ❑ Waste-water Treatment (+2)
- ❑ Local Climate & Air Quality (+2)
- ❑ Recreation (+2)
- ❑ Tourism (+1)
- ❑ Food Resources (+1)
- ❑ Raw Materials (+1)
- ❑ Medicinal Resources (+1)
- ❑ Erosion Prevention and Maintenance of Soil Fertility (+2)
- ❑ Pollination (+1)
- ❑ Maintenance of Genetic Diversity (+1)
- ❑ Aesthetic Appreciation (+1)
- ❑ Cultural Uses (+1)
- ❑ Spiritual Experiences (+1)
- ❑ Sense of Place/Community (+2)

5. Site Characteristics: *(Score:)*

- ❑ Suitable wetland hydrology (+3)
- ❑ Suitable wetland soil conditions (+3)
- ❑ Suitable topographical conditions for restoration without affecting neighbouring lands (+3)
- ❑ Landscape connectivity (+3)
- ❑ Species at Risk Habitat (+2)
- ❑ Evidence of wetland plant communities (+1)
- ❑ Opportunity for invasive species removal (+1)
- ❑ Historical property data suggesting former wetland community (+1)

11. Monitoring and Risk Management *(Score:)*

- ❑ Five-year minimum monitoring plan in place (+2)
- ❑ Offset Site will be created before Impact Site is developed on (+2)
- ❑ Opportunities for community wetland education (+1)

Total Offset Site Score: _____/100

Non-Ideal Offset Site	Moderate Offset Site	Ideal Offset Site
Score: 0-33	Score: 34-67	Score: 68-100

Eleven questions built off landscape manager experiences to guide environmental impact assessment in S. Ontario and direct wetland offset restoration efforts towards sites that have the highest likelihood of long-term success and best overall contribution to integrated regional needs.

SWOSSS Card:
CLOCA Watershed Case Study

**Regulated OMNRF Wetlands highlighted*

- *Municipality:* Town of Whitby
- *C.A.:* Central Lake Ontario
- *Environmental Consultant:* NES Inc.

Two Impact Wetland Sites:

- Both sites are within a secondary planning area
- NE site is a *Phragmites* marsh
- SW site is a shrub marsh
- It is currently unknown if they will stay or be compensated for

- Required: An **impact assessment tool** to strategically select a **possible wetland offset site** for both wetlands that has a **high likelihood of success** and **meets the integrated needs of the region**.

SWOSSS Card:
CLOCA Watershed Case Study

**CLOCA Natural Heritage System highlighted*

Total *SWOSSS Card* score of **71/100** → Ideal Wetland Offset Site

Selected Wetland Offset Site:

-Isolated features put into **one compact site** near existing valleyland NHS = **NHS expansion**

-**Municipal ownership**

-**On-site** location

-Suitable **site characteristics**

-Creates a more **ecologically-advanced ecosystem** that will offer **significant ecosystem services** to the municipality, environment and community.

-Inclusion in NHS ensures **long-term conservation success**

Benefits of Strategic Wetland Offset Site Selection

- **Prioritizes** potential **wetland offset site restoration** based on their **likelihood of success** and **overall contribution to regional needs.**
- **Reduction** in success **uncertainties.**
- **Net gain of wetlands in area and function**– Leads to improvement of water quality and quantity, protection of shoreline properties (from erosion), recreational opportunities, nutrient filtering from intensive farming, pollutant filtration, climate change mitigation, and recreational opportunities.
- **Reduced costs** to municipalities, community tax payers, and developers.
- Check list is **easy to use and understand** for majority of parties involved.

Policy and Future Directions

- **Consistency in wetland terminology** across legislation and policies.
- **Changes to Provincial Policy Statement**: Coastal, Provincially Significant, and Ecologically Rare (fens and bogs) should never be developed on.
- Provincial creation of a **Technical Guidance Manual** on wetland offsetting.
  - **Training** on Manual provided by the Province
- Policy **implemented locally by Conservation Authorities and Municipalities** who understand local landscapes.
- Should **not be entrenched into legislation** to avoid opinion of “right” to develop.
- **Feature securement strategy**: The creation of a provincial-level land acquisition fund with continuous annual funding that organizations can draw on for wetland offset restoration projects.
- **Tools** to make the policy **operational.**

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